

S06-198

10/599,084

02940350aa

Amendment dated 10/19/2009

Reply to office action mailed 05/19/2009

The following is a complete listing of all claims in the application, with an indication of the status of each:

Listing of claims:

1. (currently amended) A method for reducing motion artifacts and patient dose in radiological imaging using four dimensional computed tomography (4D CT), comprising the steps of:
 - 4 identifying a pattern in an average cycle artifacts in 4D CT images of an anatomy being imaged, said pattern image artifacts being responsive to irregularities in a reproducible periodic motion of said anatomy;
 - 7 establishing spatial and temporal tolerances around said pattern, said tolerances being an envelope around said pattern balancing an acquisition time against a quality of an acquired 4D CT image;
 - 10 measuring said a periodic motion of said anatomy so as to detect when said periodic motion is outside said tolerances irregularities;
 - 11 controlling a 4D CT scan of said anatomy so as to pause the scan during periods having said detected out of tolerance condition irregularities.
1. 2. (original) A method as in claim 1, wherein said anatomy is a lung and said measuring step uses a respiratory signal.
1. 3. (canceled).
1. 4. (currently amended) The method of claim 3, wherein said controlling step further includes the steps of:
 - 2 acquiring a respiratory signal during said 4D CT scan;

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4 applying said envelope to said respiratory signal; and
5 adapting said 4D CT scan to said respiratory signal by excluding from
6 said 4D CT scan data acquired when said respiratory signal is not within said
7 envelope.

5. (original) The method of claim 4, wherein data acquired during irregular respiratory cycles is excluded by pausing said 4D CT scan data acquisition when said respiratory signal is not within said envelope.

1 6. (original) A system for reducing motion artifacts and patient dose in
2 radiological imaging using four dimensional computed tomography (4D CT),
3 comprising:

means for identifying a pattern in an average cycle artifacts in 4D CT images of an anatomy being imaged, said pattern image artifacts being responsive to irregularities in a reproducible periodic motion of said anatomy;

means for establishing spatial and temporal tolerances around said pattern, said tolerances being an envelope around said pattern balancing an acquisition time against a quality of an acquired 4D CT image;

means for measuring said a periodic motion of said anatomy so as to detect when said periodic motion is outside said tolerances irregularities;

12 means for controlling a 4D CT scan of said anatomy so as to pause the
13 scan during periods having said detected out of tolerance condition
14 irregularities

1 7. (original) A system as in claim 6, wherein said anatomy is a lung and said
2 measuring means uses a respiratory signal.

1 8 (canceled)

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1 9. (currently amended) The system of claim ~~8~~ 7, wherein said controlling
2 step further comprises:
3 means for acquiring a respiratory signal during said 4D CT scan;
4 means for applying said envelope to said respiratory signal; and
5 means for adapting said 4D CT scan to said respiratory signal by
6 excluding from said 4D CT scan data acquired when said respiratory signal is
7 not within said envelope.

1 10. (currently amended) The system of claim 9, wherein said adapting means
2 provides that data acquired during irregular respiratory cycles is excluded by
3 pausing said 4D CT scan data acquisition when said respiratory signal is not
4 within said envelope.

1 11. (original) A method for reducing motion artifacts in radiological imaging
2 using four dimensional computed tomography (4D CT), comprising the steps
3 of:
4 identifying a pattern in an average cycle artifacts in 4D CT images of
5 an anatomy being imaged, said pattern image artifacts being responsive to
6 irregularities in a reproducible periodic motion of said anatomy;
7 establishing spatial and temporal tolerances around said pattern, said
8 tolerances being an envelope around said pattern balancing an acquisition
9 time against a quality of an acquired 4D CT image;
10 measuring said a periodic motion of said anatomy so as to detect when
11 said periodic motion is outside said tolerances irregularities;
12 controlling post-processing of a 4D CT scan of said anatomy so as to
13 omit data acquired during periods having said detected out of tolerance
14 condition irregularities.

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1 12. (original) A method as in claim 11, wherein said anatomy is a lung and
2 said measuring step uses a respiratory signal.

1 13. (canceled).

1 14. (currently amended) The method of claim ~~13~~ 12, wherein said controlling
2 step further includes the steps of:

3 acquiring a respiratory signal during said 4D CT scan;
4 applying said envelope to said respiratory signal; and
5 adapting said 4D CT scan to said respiratory signal by excluding
6 during said post-processing of said 4D CT scan data acquired when said
7 respiratory signal is not within said envelope.

1 15. (original) The method of claim 14, wherein data acquired during
2 irregular respiratory cycles is excluded by omitting data acquired during said
3 4D CT scan when said respiratory signal was not within said envelope.